

**REMARKS**

The foregoing amendments to claim 5 and the addition of new claims 15-18 are respectfully submitted in response to the official action dated April 1, 2009. The minor amendments to claim 5 are clearly supported in the specification. As for the subject matter of claims 15-18, this is clearly supported in the specification and drawings including at page 4, lines 1-12, and page 6, lines 1-4. Thus, no new matter is included in these amendments, and their entry is therefore respectfully solicited.

Claim 5 has been objected to. However, in view of the above-noted amendments to claim 5, it is clear that this objection has now been obviated.

Claim 14 has been rejected under 35 U.S.C. § 112, second paragraph as being indefinite. In view of the above-noted amendment of claim 14 to now depend from claim 13, there is now believed to be clear antecedent basis for "said carousel." This rejection is therefore also believed to have been obviated.

Claims 5-12 and 14 have been rejected as being unpatentable over Moncrieff in view of Dijkman, Sr. *et al.* under 35 U.S.C. § 103(a). Moncrieff is said to disclose a coiling system for continuously forming coiled plastic tubing comprising a main tubing shaft for forming the tubing into a helix. The main tube shaft is said to have a longitudinal axis, a driving means for rotating the shaft about that axis, a heat source downstream and adapted to heat coiled plastic tubing at the second point, and a cooling apparatus downstream from the second point for cooling the coiled plastic tubing to set it into a coiled form.

After noting that Moncrieff fails to specifically disclose a motor, the drive means described therein is said to implicitly refer to a motor or like device. It is thus said to

be obvious to use a motor as a drive means and dispose it at one end of the axis.

The Examiner then admits that Moncrieff fails to specifically disclose a tube guide. The Examiner contends, however, that it is implicit in Moncrieff that plastic is in some way disposed on the mandrel at an oblique angle to form the helix described therein, citing column 1, lines 18-22, describing winding the plastic into a helix. The Examiner concludes that anything disposing the helical plastic on the mandrel would be considered a tube guide, and a gap in the tube guide could be anything in the tube guide outletting the plastic. It is said to be implicit and/or obvious that the plastic rod of Moncrieff is disposed on the mandrel from somewhere that guides the tube onto the mandrel, and thus a tube guide having a gap is obvious and unpatentable.

The Examiner then further admits that Moncrieff fails to specifically disclose a cutter. It is stated, however, that to create a coiled product of a specific length, the coil must be repeatedly cut, and it is said to be obvious to cut the coil on the mandrel to maximize efficiency. Further, Dijkman, Sr. *et al.* is then relied on as disclosing apparatus for producing plastic coils on a mandrel in which a cutter is used to cut the plastic coil on and against the mandrel after cooling. For consistent product production, it is stated that the mandrel must intrinsically be at preselected time intervals. It is thus said to be obvious to use a cutter on the mandrel to cut a coil against it in apparatus such as that of Moncrieff.

Regarding claims 6 and 7, Moncrieff is said to further disclose a mandrel with a decreasing diameter along at least a portion of its length and a rotation speed of 150 rpm.

As for claims 8 and 11, both references are admitted as failing to disclose that the heat source is a heat gun and that the cooling source is a vortex cooling tube. The Examiner

states, however, that heating and cooling the coil would generally have the same effect regardless of the means used to do so, and that it would be obvious to select the means most appropriate for the desired process.

As for claim 9, after admitting that neither reference discloses a temperature range of 400°F to 700°F, the temperature for heating was said to not be critical and any temperature capable of softening would be adequate (citing Doell, U.S. Patent No. 2,392,842). It was thus said to be obvious to discover the optimum temperature ranges by routine experimentation.

As for claim 14, Dijkman, Sr. *et al.* is said to disclose an outer element comprising two parallel cutting means about the mandrel with the inner element being the mandrel itself, citing column 3, lines 40-45, and column 4, lines 47-56. Since both of the outer elements are said to come together at the same time, the cutting could be described as scissor-like. After then admitting that Dijkman, Sr. *et al.* fails to disclose that the outer element is rotatable, rotation is said to increase shear force and thus facilitate cutting. It was thus said to be obvious to rotate the outer cutting element in Dijkman, Sr. *et al.* to facilitate cutting. This rejection is respectfully traversed in view of the above amendments and arguments and for the reasons set forth hereinafter.

It is initially noted that, contrary to the Examiner's contention, Moncrieff is not even directed to a coiling system for forming coiled plastic tubing. To the contrary, Moncrieff is directed to flexible thermoplastic rods, and it is clear from the disclosure that these rods are not hollow tubes, such as garden hose or the like, but are solid rods of plastic material. This becomes an important difference not only in the environment involved, but more particularly due to the fact that it is precisely because of the relationship of the present invention

to flexible tubing which makes it so important, and indeed critical, to properly utilize a tube guide as required herein to appropriately feed the tubing for winding in a helix onto a predetermined point on the main tube shaft. With the rod material of Moncrieff, irrespective of precisely how these rods are fed onto the mandrel, there is nevertheless no danger that these rods might deform or collapse. On the other hand, quite the contrary is clearly the case in connection with the present invention. If the plastic tubing of this invention is not properly fed onto the mandrel in a helical form, it will tend to deform or collapse, thus destroying the product produced thereby. More will be said on this point in the following discussion.

Turning to the overall disclosure of Moncrieff, mandrel 10 includes a cylindrical part 12 terminating in cylindrical extension 13, which has a smaller diameter than that of cylindrical part 12. A hollow shaft 16, including a fixed tube 17 on the inside thereof, surrounds extension 13 and cylindrical part 12. Both the shaft 16 and the tube 17 are driven at the same speed as the mandrel 10 by means of belt 19, and reciprocating movement is created by cam 21. All of this gradually urges the helix 36 through the tube. As is recognized by the Examiner, the only discussion of creating the helix begins at column 3, line 8, with a statement to the effect that a few turns of the rod are wound by hand on the mandrel so that the free end of the rod is within the tube 17, and the end leading to the supply of rod leaves the tapered part of the mandrel at the part 38.

The mechanism disclosed in Moncrieff specifically requires the use of a tube 17 moving with and surrounding the part 12 by essentially the size of the rods therebetween. Furthermore, a complex mechanism, including fingers 31, is used to move the coils of the rod forward through this device. There

is no disclosure whatsoever in Moncrieff of the essential tube guide of the present invention, mounted with respect to a first point on the main tube shaft, and having the required gap through which the plastic tubing is directed onto the main tube shaft, the gap making an oblique angle with respect to the main tube shaft so that the plastic tubing may be wound onto the main shaft in a helical form. This specified mechanism is precisely why it is now possible to correctly and automatically apply the plastic tubing onto the main tube shaft without the need to hand apply the tubing thereto, as in Moncrieff. The Examiner apparently believes, however, that no disclosure whatsoever of such apparatus is necessary, and that it is just "obvious" on its face. The Examiner's contention that it is implicit in Moncrieff that somehow the plastic is disposed on the mandrel is simply no excuse for the utter lack of teachings in the art. In any event, however, the claims require not only a specific tube guide mounted with respect to a first point on the main tube shaft, but the specific tube guide shown in the present specification, including a gap 44 providing an opening at an oblique angle relative to the plane of the tube guide 40, such an angle for providing formation of the coils in a helical form, and in a manner which will not damage or collapse the plastic tubing of the present invention. This mechanism is not only completely absent in the prior art, but development of this technique took considerable effort in order to provide a precise mechanism for permitting automatic helical winding of tubular products without the need for human intervention, such as the hand feeding of Moncrieff, and without damaging or collapsing the plastic tubing itself. All of this belies the Examiner's assertion, utterly without support, of obviousness. It has thus been found that use of the only technique which is disclosed in Moncrieff (namely, one in which a few turns of the rod are wound by hand onto the mandrel) is simply ineffective, not only in

producing the helical winding of the present invention, but to do so in connection with plastic tubing without damaging or collapsing the plastic tubing itself.

As for the requirement for a cutter at a fourth point on the main tube shaft, once again the utter lack of any such apparatus in Moncrieff is dismissed as purely "obvious." However, since even in Moncrieff, the coiled rod only interacts with the face of the mandrel in connection with cylindrical part 12, which is surrounded by rotating shaft 16 and tube 17, there is no way in which any apparatus such as a cutter could be incorporated into Moncrieff at this location in connection with the main tube shaft itself. Furthermore, the attempt to overcome this deficiency by incorporating Dijkman, Sr. *et al.* thereinto is not considered to be appropriate or effective. Dijkman, Sr. *et al.* relates to curved plastic pieces, such as underwires for brassieres. Again, like Moncrieff, it does not even relate to the plastic tubing of the present invention. Furthermore, in this apparatus the extruded wire itself is applied to coil form 8 which includes press rollers 11 on the circumference thereof to hold the plastic wire between the outer mantle surface and the mantle surface 9. The apparatus shown in Dijkman, Sr. *et al.* is nothing like either the presently claimed invention, or even Moncrieff itself. In any event, the Examiner relies upon this disclosure solely for a discussion beginning at column 4, line 47 thereof to the effect that when the coil 15 achieves a certain length on roller 14, the plastic wire is cut in the area of the coil form 8 to remove it from the roller. No additional mechanism or discussion of same is included in this reference. It is therefore apparent that this combination of references does not teach the specific limitations of claim 5, and that, in any event, the references could not be readily combined since it is not clear how one would incorporate the apparatus of Dijkman, Sr. *et al.* into the Moncrieff device in

the first instance. Doing so would, in fact, appear to require an entire new design to be developed therefor.

With respect to claim 6, Moncrieff does not disclose the required main tube shaft which tapers from one diameter to a smaller diameter along a portion of its length. There is no taper in Moncrieff, but merely a transition from the cylindrical part 12 to the cylindrical extension 13 so that the helically wound rod can fall from its support on part 12.

With respect to claims 8 and 11, it is merely reiterated that, in addition to all of the above-noted deficiencies of Moncrieff and Dijkman, Sr. *et al.*, they simply do not disclose the heat gun of claim 8 nor the vortex cooling tube of claim 11.

It is therefore respectfully submitted that all of these claims patentably define over this combination of references, and reconsideration and allowance of these claims is therefore respectfully solicited.

Claim 13 have been rejected as being unpatentable over Moncrieff and Dijkman, Sr. *et al.* in view of Lyngaas under 35 U.S.C. § 103(a). In addition to the above-noted allegations, the Examiner contends that Dijkman, Sr. *et al.* discloses that the cutter is disposed on both sides of the mandrel and can thus be considered to surround the shaft. Both Moncrieff and Dijkman, Sr. *et al.* are admitted as failing to disclose a carousel for collecting the coiled plastic. However, the concept of stepwise rotating carousels to collect a product is said to be well known. One example is said to be Lyngaas, and although the carousel is directed towards an unrelated manufacturing process involving objects collected into boxes on a stepwise rotating carousel, the idea of packing or collecting a product in a manufacturing process is said to be transferable to the coil-making systems of Moncrieff and Dijkman, Sr. *et al.* The Examiner thus concludes that it would be obvious to modify

the Lyngaas carousel to collect the coils on a stepwise rotating carousel after they are cut from the mandrel. This rejection is respectfully traversed in view of the above amendments and arguments and for the reasons set forth hereinafter.

Applicant would reiterate all of his above-noted contentions with respect to the clear deficiencies of both Moncrieff and Dijkman, Sr. *et al.* with respect to claim 5, as well as with respect to claim 13 dependent thereon. Indeed, claim 13 is not only directed to a cutter and a carousel, but to a carousel which has a plurality of shafts, each in turn aligned with the main tube shaft as the carousel rotates stepwise at preselected intervals for collecting lengths of coiled plastic tubing subsequent to cutting of the tubing.

Turning to Lyngaas, the disclosure of any "carousel" therein bears no relationship whatsoever to the carousel specifically required by the present claims. Indeed, incorporation of any part of the device shown in Lyngaas into either Moncrieff or Dijkman, Sr. *et al.*, or indeed even the combination of those references, would present a substantial and significant engineering and design problem. It is simply improper to baldly state that it would be "obvious" to employ a carousel in connection with the coiling system of the present invention. Reconsideration and allowance of claim 13 is therefore also respectfully solicited.

Finally, we would note that additional dependent claims 15-18 are directed to a specific concept in combination with claim 5 which is also nowhere taught or suggested in the art. Thus, the inclusion of a first shaft portion having a surface which has sufficient frictional force to assist in winding of the helix around the main tube shaft, so that the tube guide directs the plastic tubing onto this first portion of the main tube shaft, is nowhere suggested by the art. Furthermore, the use of a second shaft portion having a material



of lower frictional force for removal of the helically wound plastic tubing, such as a metallic surface, is also not suggested in the art. It is therefore clear that these claims are also fully patentable over the art, and allowance of these claims is also respectfully solicited.

It is therefore respectfully submitted that all of the claims now contained in this application possess the requisite novelty, utility and unobviousness to warrant their immediate allowance, and such action is therefore respectfully solicited. If, however, for any reason the Examiner does not believe that such action can be taken, it is respectfully requested that he telephone applicant's attorney at (908) 654-5000 in order to overcome any further objections to the allowance of these claims.

Finally, if there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

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Respectfully submitted,

By 

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